



Physicist Zoe Martin's fusion quest: a stellar future

August 27, 2013



[Return to homepage](#)

From revealing radiation hydrodynamics to creating energy, physics student pursues science's boundaries

Today, internships are a valuable career launching tool; but many college students complain their internships do not provide structured learning, applicable skills—or, worse, they perform menial tasks for paltry pay.

Not Los Alamos students.

At the Lab, students are mentored by world-class researchers across multiple disciplines, solving real-world problems on powerful technology. Just ask physics student Zoe Martin.

“Los Alamos is helping me down my career path by giving me exposure to resources I wouldn’t get anywhere else,” says Martin, completing her undergraduate degree at the University of New Mexico. “I am not just sitting in a classroom. I get to work in the physics field. I learn more here at Los Alamos than I do my whole semester at school.”

Martin discovered her calling while working with the Lab’s Navy Systems group responsible for the physics design and assessment of nuclear stockpile systems. She helps develop radiation hydrodynamics codes to model inertial confinement fusion (ICF) implosions, and other high energy density physics problems.

A respected ballerina raised in Los Alamos, Martin, who volunteers at an animal shelter, originally studied anthropology; a summer internship at the Lab inspired her to switch to physics and its vast opportunities.

Currently, Martin runs computer simulations to model a set of experiments completed on the OMEGA laser. She analyzes the simulations for materials experiments.

Getting to work on projects that may change the field of physics, Martin helped design targets for National Ignition Facility (NIF) last year.

“This is one of the coolest things I’ve done here,” Martin said. The NIF is able to heat and compress matter to temperatures and densities unattainable anywhere else on earth. The ultra-powerful laser system, which melds 192 laser beams into a single energetic burst, slams a target in billionth-of-a-second pulses that release temperatures 100 million degrees and pressures more than 100 billion times Earth’s atmosphere.

If researchers can obtain successful ignition (a type of fusion), they may be able to create a miniature “sun”, an immense energy source.

Martin said her mentor, physicist Leslie Sherrill, takes the time to explain and teaches her relevant and applicable science—and she’s helping her get published, a rare but career-changing feat for an undergrad.

[» Return to homepage](#)

Los Alamos National Laboratory

www.lanl.gov

(505) 667-7000

Los Alamos, NM

Operated by Los Alamos National Security, LLC for the Department of Energy's NNSA

